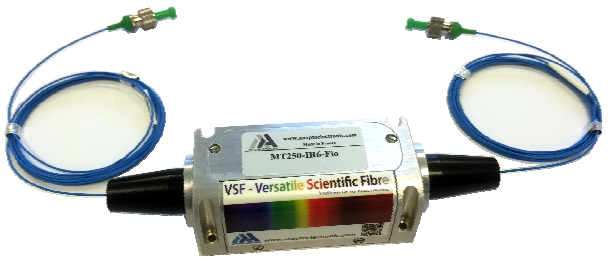
MT180-G430-Fio-MM, MQ180-G9-Fio-xx MT80-G60-Fio-xx, MT200-BG9-Fio-xx, MT200-BG18-Fio-xx, MT200-Rxx-Fio-xx

AO FIBRE PIGTAILED MODULATORS/SHIFTERS for Visible 400-700 nm



TECHNICAL DATA SHEET

Product Overview

These fibre pigtailed devices are optimized for a single wavelength within their range of operation [400-700]. They can operate for intensity modulation, fixed or variable frequency shifting, pulse picking or q-switching. AA offers a complete range with different carrier frequencies (180, 200, 80 MHz) and different rise/fall times (9, 13, 18,60,430 ns) in order to fit most applications. Available with PM, SM or Multimode fibres.

Features

- Polarization Maintaining or Single Mode fiber
- FC/APC
- Positive frequency shift (negative on request)
- High extinction ratio

Technical Specifications

Parameters	MT180-G430-Fio-MM	MQ180-G9-Fio-xx	MT80-G60-Fio-xx	MT200-BG9-Fio-xx	MT200-BG18-Fio-xx	MT200-R9-Fio-xx	MT200-R18-Fio-xx
Material-Acoustic mode-Velocity	TeO2 - [L] - 4200 m/s	SiO2 [L] – 5960 m/s	TeO2 - [L] - 4200 m/s				
Optical Wavelength range	488-532 nm	488-532 nm , AR coated		488-561 nm, AR coated		630-700 nm , AR coated	
IL, Insertion Losses	Nom 3 dB, < 4 dB	Nom 3 dB, < 4 dB	Nom 3 dB, < 4 dB	Nom 3 dB, < 4 dB	Nom 2 dB, < 3 dB	Nom 3 dB, < 4 dB	Nom 2 dB, < 3 dB
Input / Output Polarization	-	Linear (PM fibres)	Linear (PM fibres) – Random (SM fibres)				
PDL, Polarization Dependence Losses	< 0.5 dB	< 0.5 dB	< 0.5 dB				
Carrier frequency / Frequency shift	+180 MHz	+180 MHz	+80 MHz	+200 MHz	+200 MHz	+200 MHz	+200 MHz
Static Extinction Ratio	> 30 dB, nom 35 dB	> 30 dB, nom 35 dB	> 40 dB, nom 45 dB	> 35 dB, nom 40 dB	> 40 dB, nom 45 dB	> 40 dB, nom 45 dB	> 45 dB, nom 50 dB
Fibre type (SM / PM)	Multimode Fibres (MM) Core 50µm, Cladding 125µm, NA 0.22	PM (PER > 18dB)	SM or PM (PER > 18dB)				
Jacket type	HYTREL 900 µm						
Fibre connectors	FC/APC						
Pigtail length	1 meter (IN/OUT)						
Rise/Fall time	< 430 ns	9 ns	60 ns	9 ns	18 ns	9 ns	18 ns
Analog modulation BW (-3dB)	>1 MHz	53 MHz	8 MHz	53 MHz	26 MHz	53 MHz	26 MHz
Max Input laser power (CW)	500 mW	100 mW	100 mW	5 mW	20 mW	100 mW	400 mW
Input impedance	Nom 50 Ω						
V.S.W.R.	Nom < 1.2/1						
RF Power / Connector	3 W / SMA	4 W / SMA	< 1.3 W / SMA	< 1.3 W / SMA	< 1.3 W / SMA	< 1.6 W / SMA	< 1.6 W / SMA
Size / Weight	(Lxlxh) 89 x 46.6 x 32.5 mm^3 / 250 g IN PRO 334						
Operating Temperature	+10 to +40°C, Non condensing						
Storage Temperature	-40 to +50°C, Non condensing						

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Options / On request

FIBER JACKET	☑ PVC 3 mm	☑ Stainless steel 3 mm
FIBER CONNECTOR	☑ Super FC/PC	☑ SMA
PIGTAIL LENGTH	☑ 2 m	☑ Other
FREQUENCY SHIFT	☑ « - » Negative shift	☑ Variable frequency shift

Access to your operating manual

Rise Time (Tr) is beam diameter (Φ) sensitive:

$$Tr = 0.66\frac{\Phi}{V}$$

Amplitude modulation bandwidth (F_{-3dB}) is rise time (Tr) sensitive:

$$F_{-3dB} = \frac{0.48}{Tr}$$

Insertion Loss (IL) is the amount of launched light lost within the Acousto-Optic Modulator (AOM). It is defined as the ratio of the input optical power over the output optical power.
The value of IL indicated in datasheet includes optical transmission through the crystal, diffraction efficiency and coupling losses. Losses at FC connectors are not included.

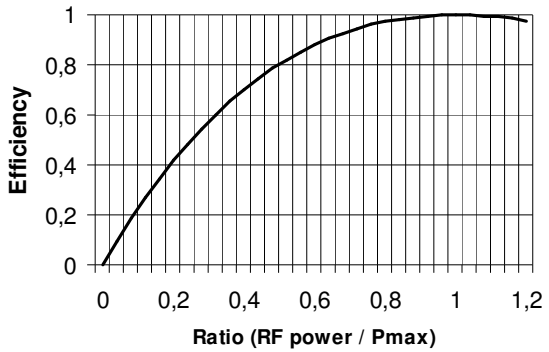
RF power (P) is wavelength (λ) sensitive:

$$\frac{P_1}{P_2} = \frac{\lambda_1^2}{\lambda_2^2}$$

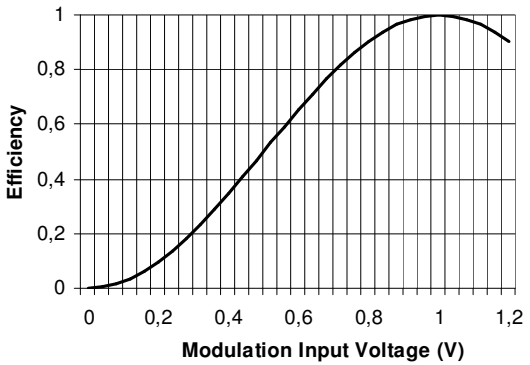
Polarization dependent loss (PDL) is when the insertion loss of a signal differs between the two different states of polarization. Polarization Dependent Loss is a measure of the peak-to-peak difference in Transmission of the AOM with respect to all possible states of polarizations.
It is defined as the ratio between the maximum and minimum transmission power with respect to all possible axes of polarization.
The PDL of the acousto-optic devices is mainly due to the polarization dependency of the diffraction efficiency.

PMD (Polarization Mode Dispersion) is the differential arrival time of the different polarization components of an input light pulse, transmitted by the AOM. This light pulse can always be decomposed into pairs of orthogonal polarization modes. These polarization modes propagate at different speeds according to a slow and fast axis induced by the birefringence of the AOM.
Second Order PMD: The second order PMD describes how polarization induced delay, varies with wavelength. It provides the indication of the wavelength dependency of the PMD.

Relative Efficiency versus RF power



AO relative Efficiency vs driver MOD IN



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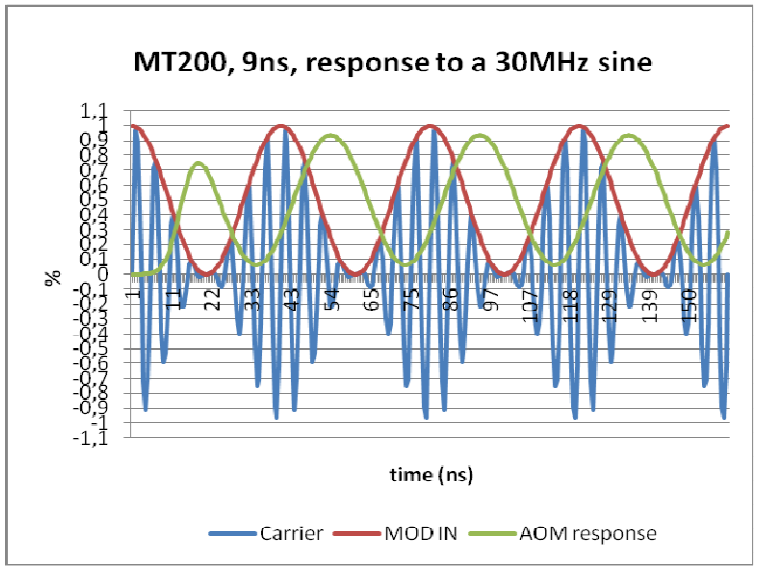
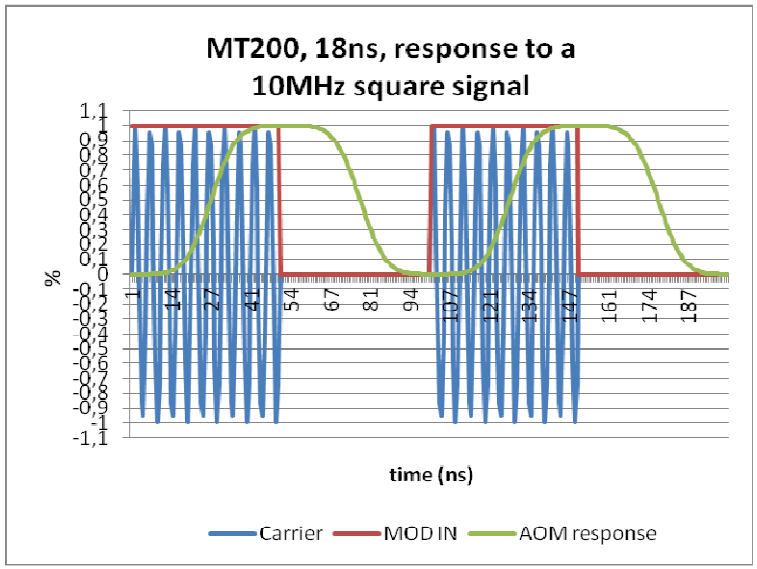
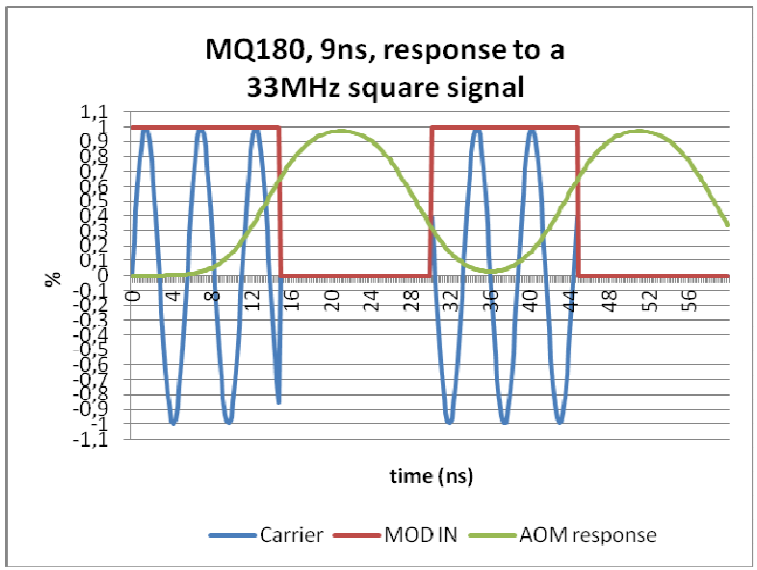
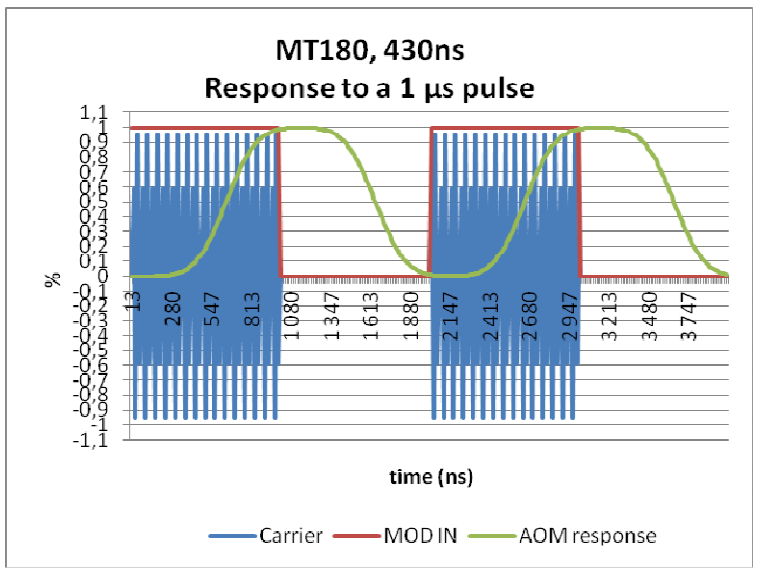
Examples









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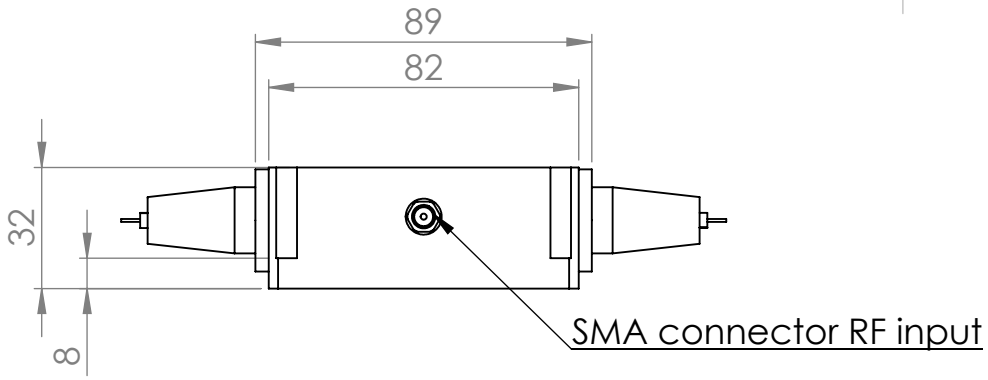

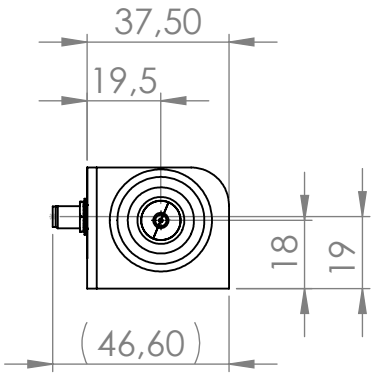

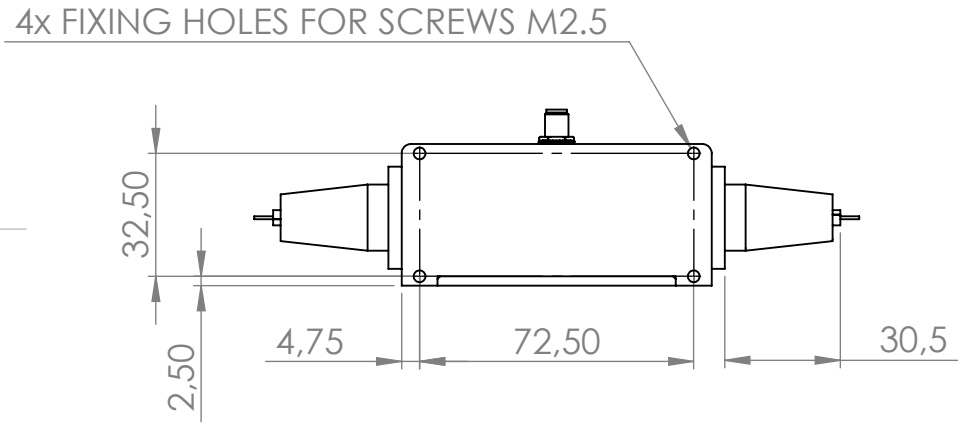

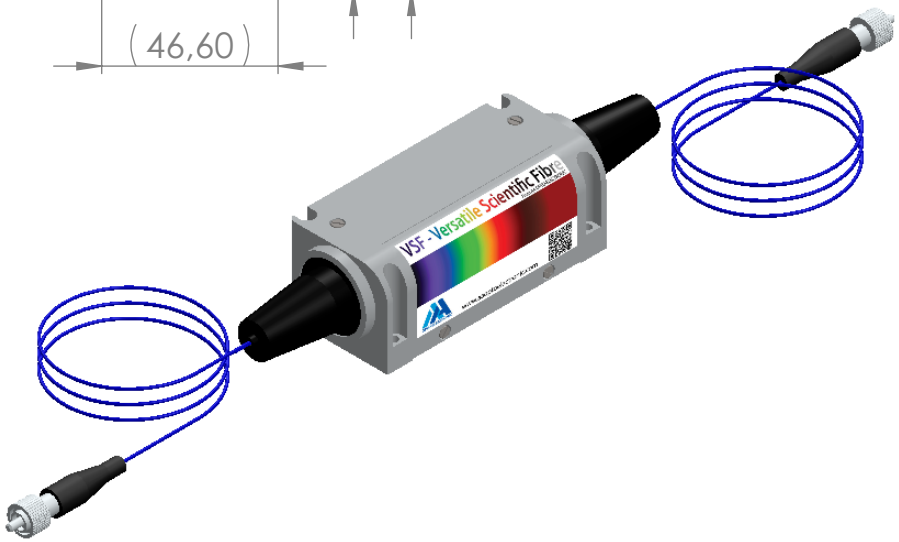

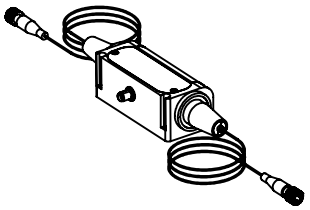

Indice Index	Date	Auteur Author	Modifications
A	17/12/14	G.M	Plan initial / Initial plan

Conception Design	GM
Vérification Checking	YN
Tolérance Tolerance	ISO 2768mK
Echelle Scale	1:2
Format	A4

Désignation / Designation

PLAN D'INTERFACE

Référence / Reference

IN-PRO-334

Matière / Material	Traitement / Treatment	Finition / Finish

OPTO-ELECTRONIC

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Folio / Sheet	Indice / Index
1/1	A